Focus on Livable Communities

Designing Safe Streets and Neighborhoods

Caught in the Crosswalk

In *Caught in the Crosswalk*, the Surface Transportation Policy Project highlights some disturbing facts about pedestrian safety in California:

"Motor vehicle collisions are the leading cause of accidental death in California, resulting in over 3,000 fatalities every year."

"More than 20% of these deaths involve pedestrians" despite the fact that the number of people walking in our communities is on the decline.

Children are especially vulnerable. "Being hit by a car while walking is the second leading cause of death for California children aged 5-12. Statewide, nearly 5,000 child pedestrians are injured annually."

Pedestrians often get short shrift in the traditional transportation planning process. "California pedestrians account for more than 20% of all traffic fatalities but receive less than one percent of federal traffic safety funding."

For information on this 1999 report, visit www.transact.org.

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One of the difficulties in creating more walkable and bicycle-friendly neighborhoods is the concern over safety. Good design can help overcome some of the fears over personal safety and being victimized by crime, as a companion fact sheet explains. But of equal concern is the sense that many of our streets and avenues – even in residential neighborhoods – are not safe to walk or ride on because they are designed solely to move motor vehicles in large volumes and at high speeds.

This perception is real: a disproportionately large number of pedestrians are killed and injured in California each year. Children and seniors, the most vulnerable users of streets and sidewalks, are often at greatest risk.

What accounts for these numbers? Why are we seeing such a disproportionately high number of fatalities and injuries among pedestrians?

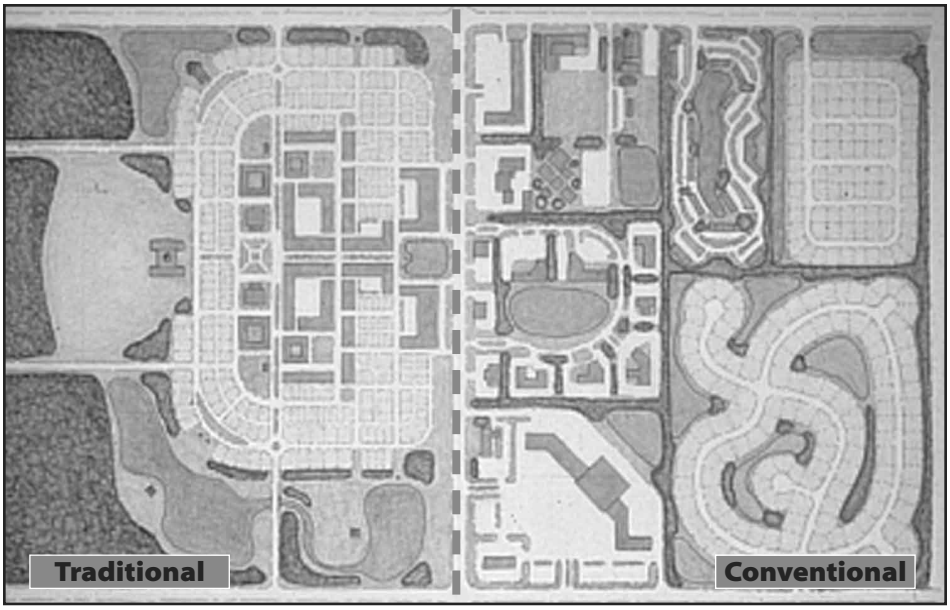
While a number of factors are responsible – including the minimal amount of funding for pedestrian safety projects – the way we have been designing and building our communities during the past 50 years lies at the root of the problem.

We have separated the places where we work from the places where we shop, and both have been separated from the places where we live. The only way to get from one point to another is by driving. It is no wonder that the typical U.S. household makes 10-14 vehicle trips every day.

Poor Planning Results in Dangerous Streets

Traditional vs. Conventional Patterns of Development

In the 1920s, zoning for separate uses became the basic tenet of modern city planning. Planners and others concerned with the public's health correctly argued that placing noxious, polluting industries close to where people lived was not a good thing. But, unfortunately, in the decades that followed the idea of separating uses was taken to an extreme and we started to treat retail and office uses as if they were noxious uses as well. As a result, today we need a 2,000-pound car to pick up a one pound loaf of bread.



As we've spread out more in this low-density sprawl pattern, we are driving more and driving longer distances. While California's population grew by 51% from 1970 to 1990, vehicle miles traveled increased by 117%. In addition to spreading out further and driving longer distances, we are also relying more and more on our cars for simple errands that we used to be able to do by walking.

We can gain a better understanding of how this has happened by comparing plans of two communities, a conventional one built after 1950 and a traditional one built in the 1920s.

The left side of the plan above shows the traditional pattern of development, the right shows the conventional. Each contains the same square footage of residential, commercial, retail, educational, and other uses. The only difference is how those uses are arranged. In the conventional pattern, different uses are strictly separated and neighborhood collector and local streets do not connect.

In the traditional pattern different uses are in close proximity to one another and are laid out in shorter, connected blocks.

In the conventional neighborhood, a parent taking a child to the soccer field in the upper part of the diagram will have to make four trips (drop off, go home, pick up child and go home). All those trips will require getting on an arterial roadway and will increase the likelihood of traffic accidents.

Of course, retailers see tens of thousands of vehicles on the arterial and also want to locate there. Traffic engineers respond by building 8- and 10-lane arterials to handle the traffic. In the process we create large, congested roadways and an environment that is inhospitable for pedestrians and bicyclists.

In the traditional neighborhood, many of these trips are internal and don't impact arterial or regional roadways. And, because different uses are closer to one another, most of these trips are short enough that they can be made by walking or riding a bicycle. Short blocks and narrow, tree-lined streets encourage people to walk.

Traditional residential streets are narrow because the blocks are short, they don't have many houses on them and traffic volume is low. The narrow streets, and the placement of trees and houses closer to the street, slow cars down and create a comfortable environment for pedestrians.

Conventional streets are long, carry more traffic and are so wide that they encourage drivers to speed. Sidewalks are often attached to the curb and trees and houses are set back from the street so there is no buffer for pedestrians. As a result people don't feel safe and comfortable walking on these streets.

"Several local jurisdictions are striving to make pedestrians a priority by improving sidewalks, slowing traffic, making crosswalks more visible…the more typical response to concerns about pedestrian safety is to remove crosswalks and let pedestrians fend for themselves."

— *Caught in the Crosswalk*, 1999

Speed Kills

We can see that something is wrong with the way we are designing our residential streets in the fact that over half of all pedestrian fatalities occur on roadways that run through residential neighborhoods. *(STPP, Mean Streets, 1997)*

As streets get wider, drivers instinctively accelerate. Research has shown that wider streets – which encourage people to drive too fast – are also the streets that result in more crashes. As speeds go up, the risk to pedestrians and bicyclists increases significantly.

Aggressive enforcement of traffic speeding and other motor vehicle laws can help insure that drivers slow down and respect other users of the road.

However, if a street is designed to encourage drivers to travel at 45 mph instead of the posted 35 mph, police are often at a loss. First of all, police can't be present at all times.

Secondly, traffic enforcement agencies that try to address speeding on arterial and residential streets are often hamstrung by state laws which require that speed limits not be set any lower than the actual speed of 85% of the vehicles on a given street. This "85th percentile" law — adopted to prevent municipalities from setting up so-called "speed traps" — helps insure that high-speed streets are a self-fulfilling prophecy.

WIDER STREETS = MORE CRASHES = MORE FATALITIES

In 1999, planner Peter Swift studied approximately 20,000 police accident reports in Longmont, Colorado, to try to determine which of 13 physical characteristics at each accident location (e.g., width, curvature, sidewalk type, etc.) might account for the crash. The results are not entirely surprising: The highest correlation was between accidents and the width of the street. As streets got wider the number of accidents per mile per year increased. **The safest streets were narrow, slow, 24-foot wide streets; the most dangerous were 36-foot wide streets typical of new subdivisions.**

As one would expect, deaths and injuries to pedestrians increase significantly as the speed of motor vehicles goes up. The reason is obvious: As vehicle speeds increase a driver's ability to respond to danger is substantially reduced. But the relationship is not linear. At 15 mph, a vehicle will be able to stop forward movement in 73 feet. But double the speed to 30 mph, and it will take 196 feet. **At 40 mph, it will take over four times the distance for the car to stop.**

So, what happens when a person is hit at these speeds? At 15 mph, the odds of surviving are approximately 96%. But when a person is hit by a car traveling at 31 mph, the odds are significantly reduced. **And at 45 mph the odds of survival are just 17%.** (Source: ITE, *Traditional Neighborhood Development Street Design Guidelines*, June 1997)

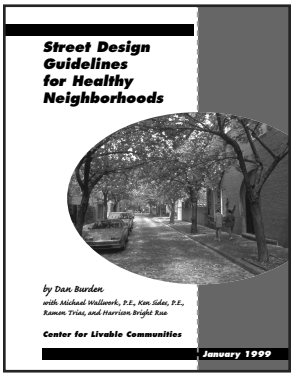
"Often pedestrians are not even seen as legitimate users of the road. Until recently they were referred to as 'traffic flow interruptions' in the Highway Capacity Manual, the primary road design reference book for traffic engineers."

— *Caught in the Crosswalk,* Surface Transportation Policy Project, 1999

Solutions

So how do we address these problems? One way is to make sure that when we design new communities we incorporate all the elements that result in a livable, pedestrian- and bicycle-friendly neighborhood.

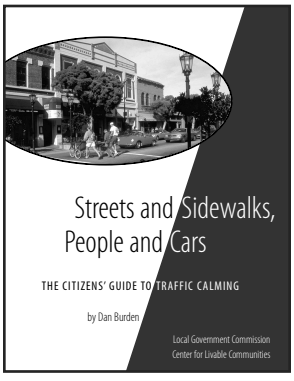
Healthy Street Design. The Ahwahnee Principles for Livable Communities are a good place to start. They call for complete communities with a mix of uses, a central focus, walkable destinations, multiple connections and a mix of housing types and densities to support transit. In these communities – based on the design of older traditional neighborhoods – we have to make sure that the streets are also well-designed: with short blocks, narrow, tree-lined streets with on-street parking and sidewalks that are at least five feet wide. (For more details, see the LGC's *Street Design Guidelines for Healthy Communities*.)



We can also retrofit some streets and arterials in conventional neighborhoods to slow down the speed of vehicles and improve the safety of pedestrians through what is known as "traffic calming."

Traffic calming slows vehicles on streets where drivers travel at higher speeds than is desirable. It is a way to reduce the negative effects of motor vehicles, alter driver behavior and improve conditions for the property owner, retailer, walker and bicyclist.

Traffic Calming. Traffic calming techniques consist of relatively simple physical changes to streets and sidewalks that help slow down vehicle speed and improve conditions for pedestrians and cyclists. For example, adding a landscaped median to a street that is too wide will not only slow down the cars but will create a refuge for pedestrians trying to cross the street. Traffic calming yields significant safety benefits. For example, adding small traffic circles at intersections resulted in the following reductions in crashes: 77% in Seattle, 58% in Portland, OR and 82% in Vancouver, BC. Curb extensions in Vancouver reduced crashes by 75% and narrowing streets reduced accidents by 74%. (Source: British Columbia Insurance Corporation, *Safety Benefits of Traffic Calming*, 1996) For a detailed discussion, see the LGC's *Streets and Sidewalks, People and Cars: The Citizens' Guide to Traffic Calming*.



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RESOURCES

"The Ahwahnee Principles for More Livable Communities." Local Government Commission. 1991. www.lgc.org

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